Restricted ethnic diversity in human embryonic stem cell lines.

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Public Summary:
Human pluripotent stem cells can grow essentially forever in culture and differentiate into a wide array of cell types, which make them a potential source of unlimited quantities of differentiated cells for basic and clinical research. These properties might lead one to conclude that a small number of cell lines would be sufficient to meet all needs. However, it is becoming increasingly clear that the genetic background of human cell lines can have significant effects on experimental results. Ethnicity can serve as a proxy for genetic variation to ensure diversity in genetic backgrounds in a study population. We determined the ethnic origin of 47 human embryonic stem cell (hESC) lines, 5 human induced pluripotent stem cell (hiPSC) lines and 58 non-pluripotent samples. Using genome-wide DNA analysis methods, we found that the ethnic origins of the hESC lines were quite restricted, with the large majority of hESC lines (43 of 47) of either European or East Asian ethnicity. The hiPSC lines and non-pluripotent samples were much more ethnically diverse, suggesting that hiPSC technology could be used to generate ethnically diverse collections of hPSCs.

Scientific Abstract: